31. Low Sagebrush Ecological Series

Table 31-1. Full names and short names for the ecological types in the Low Sagebrush Ecological Series.

Ecological Type Code	Name	Plant Association Code	Short Name
SU4	Low sagebrush/Parry oatgrass-Idaho fescue–Smectitic Cryoboralfs–Exposed Subalpine slopes and ridges, 9,200-10,500 ft	ARAR8/DAPA2-FEID	Low sagebrush/Idaho fescue–Heavy clay soils
SU5	Low sagebrush-Mountain big sagebrush/Parry oatgrass-Idaho fescue–Smectitic Cryoboralfs–Exposed Subalpine ridges, 9,000-10,000 ft	ARAR8-ARTRV/DAPA2-FEID	Low-mountain sagebrushes/Idaho fescue–Heavy clay soils
SU6	Low sagebrush/Parry oatgrass-Thurber fescue-Idaho fescue–Argic Cryoborolls–Subalpine slopes, 8,900-10,600 ft	ARAR8/DAPA2-FETH-FEID	Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils

The *Artemisia arbuscula* series is described as new here, having been broken out of the *Artemisia* (Sagebrush) Series of Tweit and Houston (1980), which is much too large. Stands of this series occupy sites that are small to large to occasionally very large. The medium to large sites are easy to distinguish on aerial photos, but it is difficult to identify them to type, because of their similarity on the photos to early seral stages of other types which also appear as short grasslands.

Vegetation, Climate, Soils

This series encompasses low shrublands, where the grasses often overtop the shrubs, so that the community resembles a grassland from an oblique angle. Soils are shallow to a hard claypan formed of rocks cemented together with montmorillonite clay, creating a layer impermeable to most plant roots (Hironaka and others 1983). These soils are poorly aerated (Fosberg and Hironaka 1964).

Table 31-2. Climate and Soils

Characteristic	Value	Reference
Precipitation	400-660 mm/yr 16-26 in/yr	Local data
Growing period	27 da (25-30 da)	Jensen (1989)
Soil degree days	190 (165-225)	
Soil temperature	Annual: 9°C (7-11°C) 48°F (45-52°F) summer: 16-17°C 60-63°F	

Table 31-3. Production in the low sagebrush/Idaho fescue type in northern Nevada (Jensen and others 1988-1989)

Plant Group	Value ± SD, kg/ha/yr
Shrubs	109 ± 57
Graminoids	432 ± 158
Forbs	95 ± 73
Total	627 ± 207

Fire Management

Low sagebrush is easily killed by fire, but these stands are difficult to burn because of low canopy heights, low productivity, and consequent scattered fuels. Such stands may be effective firebreaks (Bunting and others 1987).

Insects and diseases are not documented for this series.

Range and Wildlife Management

Because sites of this series are so open, they are often grazed, but they are not very productive of forage. Sandwort (*Eremogone congesta*) increases with grazing; Idaho fescue (*Festuca idahoensis*) decreases with grazing.

Winter use by deer or elk, or heavy summer use by cattle or sheep, may lead to decreases in low sagebrush (Tweit and Houston 1980).

Hironaka and others (1983) noted that the onset of growth in the spring is delayed due to the very wet soils when compared to surrounding areas that support mountain big sagebrush.

Deer, elk, pronghorn, and sage grouse use sites of this series in mild winters and springs in eastern Oregon (Dealy and others 1981), but such sites in the UGB are too high in elevation for sage grouse, deer or elk to access them in most springs or winters Sage grouse sometimes browse low sagebrush, which is also reported to be one of the most palatable species of sagebrush to mule deer (Dealy 1981).

Recreation, Roads & Trails, Scenery

Sites of this series are generally suitable for roads and trails, since they are often nearly flat and roadcuts are not necessary. The soils are packed heavy-clay and coarse fragments that are stable as long as they are not cut. Compaction from equipment, roads, or trails should be minimized. Sites of this series are also generally suitable for developed or dispersed recreation, but developments should be above-ground. However, these sites are open, exposed, windy, and far from any attractions, so preference for recreation is low.

Revegetation and Rehabilitation

These sites blow clear of snow relatively early, so they are cold, and they lack cover. Recovery after revegetation will be slow (Tweit and Houston 1980).

Key to Ecological Types in the Low Sagebrush Series

1. Shrubby cinquefoil >5% cover SU4
1. Shrubby cinquefoil usually absent, rarely <3% cover ..... (2)

2. Mountain sagebrush >10% cover, often >20% ..... (4)
2. Mountain sagebrush usually absent, sometimes <10% cover ..... (3)

3. Soils Argic Cryoborolls, coarser (average 54%) soils SU6
3. Soils Smectitic Cryoboralfs, somewhat less coarse (average 33%) SU4

4. Saskatoon serviceberry >25% ..... SA6 in Serviceberry Series
4. Saskatoon serviceberry usually absent, rarely <1% cover ..... (5)

5. Deeper (average 85 cm), coarser (average 32%), loamier soils, Argic Cryoborolls SU1
5. Somewhat shallower (average 73 cm), less coarse (average 19%), clayier soils, Smectitic Cryoboralfs SU5

Table 31-4. Characteristics of Ecological Types within Ecological Series 31 in the Upper Gunnison Basin.
Numbers are shown in form *Average (Minimum-Maximum)*

Code Short Name	No. Samples	Elevation, ft	Avg. Aspect, °M (r) Slope, %	Soil Coarse, %	Depth, cm Mollic, cm	Surface: Coarse, % Bare, %	Cover, %: Trees Shrubs Graminoids Forbs	Total Live Cover, % No. Species TLC/NS, %
SU4 Low sagebrush/Idaho fescue–Heavy clay soils	25	9,618 (9,210-10,490)	259 (0.54) 14 (8-31)	33 (0-66)	85 (46-140) 24 (0-87)	9 (0-41) 11 (1-31)	0 (0-1) 32 (5-61) 76 (38-116) 54 (8-127)	161.6 (109.0-241.1) 33 (12-49) 5.1 (2.7-9.1)
SU5 Low-mountain sagebrushes/Idaho fescue–Heavy clay soils	5	9,460 (9,000-9,920)	259 (0.54) 10 (10-10)	19 (19-20)	73 (26-120) 27 (3-51)	1 (1-1) 4 (2-5)	0 (0-0) 52 (31-66) 83 (37-150) 47 (19-109)	182.4 (128.5-236.0) 22 (12-40) 10.7 (5.0-19.7)
SU6 Low sagebrush/ Thurber-Idaho fescues–Cold dark clay soils	4	9,753 (8,980-10,530)	89 (0.24) 18 (8-40)	54 (30-77)	93 (56-139) 48 (24-106)	13 (3-32) 15 (13-19)	0 (0-0) 26 (18-34) 87 (44-126) 40 (21-65)	153.2 (134.4-164.1) 30 (19-36) 5.6 (4.1-8.6)

Low sagebrush/Parry oatgrass-Idaho fescue–Smectitic Cryoboralfs–
Exposed Subalpine slopes and ridges, 9,210-10,490 ft

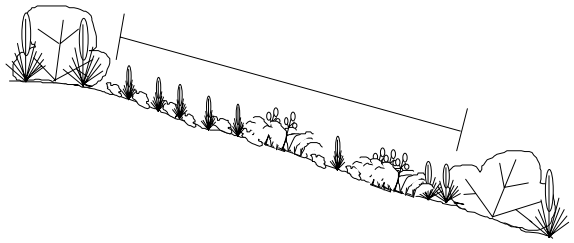


Figure 31-1. Cross-section (in the bracket) of vegetation structure of *Low sagebrush/Idaho fescue–Heavy clay soils*. Aspects are westerly, and slope angles average 14%.

Low sagebrush/Idaho fescue–Heavy clay soils is a very common type outside the deep rainshadows on exposed Subalpine ridges with heavy-clay (Smectitic) soils. It is common on gentle slopes in the Subalpine zone of the Gunnison Basin. This type also occurs on the western slopes of the Rocky Mountains in western Montana, southwestern Idaho, southeastern Oregon, western Wyoming, northwestern and central-western Colorado, and northeastern Utah. *Low sagebrush/Idaho fescue–Heavy clay soils* is characterized by low sagebrush (ARAR8), Idaho fescue (FEID) and ballhead desert sandwort (ERCO24). Many sites also have Parry oatgrass (DAPA2) or Thurber fescue (FETH). See Table 31-8 for common species names and codes. Other distinguishing features include location in the Subalpine zone and residual or colluvial Cryoboralfs.

Low sagebrush/Idaho fescue–Heavy clay soils is related to *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*, which is codominated by mountain sagebrush (ARTRV) and occurs at slightly lower elevations on less-coarse soils. *Low sagebrush/Idaho fescue–Heavy clay soils* is also related to *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*, which occurs on southeasterly slopes (rather than westerly) on coarser, deeper soils. The soils of *Low sagebrush/Idaho fescue–Heavy clay soils* are morphologically similar to those of *Black sagebrush/Arizona fescue–Coarse heavy clay soils–Windward*, but the vegetation, soil temperature, and climate are very different. These two types have often been confused in the past, as evidenced by the local place name Black Sage Pass. There is no black sagebrush (ARNO4) nearby, but there is plenty of low sagebrush (ARAR8)! The two species and associated ecological types are easily distinguished.

The soils of *Low sagebrush/Idaho fescue–Heavy clay soils* resemble concrete, because they consist of coarse to very coarse fragments mixed with very fine-textured, sticky Smectite clay. The clay glues the coarse fragments together in a very tight, water-impermeable substance that resembles concrete.

The plant association *Artemisia arbuscula/Danthonia parryi-Festuca idahoensis* is based on *Artemisia arbuscula/Festuca idahoensis* (Beetle 1961, Dealy 1971, Schlatterer 1972, Volland 1976, Mueggler 1980, and Tweit and Houston 1980).

This type is usually adjacent to and interspersed with mountain big sagebrush/Thurber fescue communities. Low sagebrush sites often occur as patches within a sagebrush/Thurber site.

Grazing by livestock, elk, and deer removes palatable Parry oatgrass and Idaho fescue first, after which site are dominated by low sagebrush and forbs, especially sandwort. Once the seed sources for those grasses are eliminated, the low sagebrush-forbs community becomes a *disclimax*. Horizontal obstruction varies from very low to moderate, averaging low, and there is typically very little hiding cover for deer and elk on these sites. Mule deer and elk use of community types A, B, C, and D is low in the winter and moderately low spring through fall for rest. Deer and elk use of community E is low both in winter and spring through fall. Sites are rarely used by sage grouse for cover in the summer. Sage grouse use of community types A, B, C, and E is very low for leks in spring and for nesting, but moderate in the summer. Sage grouse use of community E is moderately low in summer.

Summary of Ecological Type Characteristics

1. Explanation of symbols in Appendix A. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	24, soil descriptions from 19; 4 not assigned to a CT (total 28)
ELEVATION	9,620 ft (9,210-10,490 ft); 2,932 m (2,807-3,197 m)
AVERAGE ASPECT	255°M (r = 0.58)
LITHOLOGY	Mostly sedimentary: shale-sandstone-mudstone [68%]; some igneous: gneiss-granite-schist-breccia-tuff-basalt [27%]
FORMATIONS[1]	Km-Jm-KJdm-Kd [64%]; Tos-Tpl-Tbb-Tmi [21%]
LANDFORMS	Soil creep slopes [43%], ridges [30%], benches and mesas [13%], slump-earthflows [9%]
SLOPE POSITIONS	Backslopes [42%], summits and shoulders [46%]
SLOPE SHAPES	Convex [52%] to linear [35%] horizontally, Linear [78%] vertically
SLOPE ANGLE	13.8% (8-31%)
SOIL PARENT MATERIAL	Residuum [35%], Colluvium [26%], Colluvium over Residuum [17%]
COARSE FRAGMENTS	8.7% (0-41%) cover on surface, 33.8% (0-66%) by volume in soil
SOIL DEPTH	86 cm (47-140 cm); 34.0 in (19-55 in)
MOLLIC THICKNESS	25 cm (0-87 cm); 9.7 in (0-34 in)
TEXTURE	On the surface, a wide variety, led by clay loam [35%] and loam [26%]; subsurface clay [74%]
SOIL CLASSIFICATION	All Cryoboralfs, mostly deep [76%]
TOTAL LIVE COVER	163.1% (109.0-241.1%)
NUMBER OF SPECIES	33.0 (12-49)
TOTAL LIVE COVER/NO. SPECIES	5.2% (2.7-9.1%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that may be the product of its unique soils.
WATER	Soils are impermeable, so most water runs off.

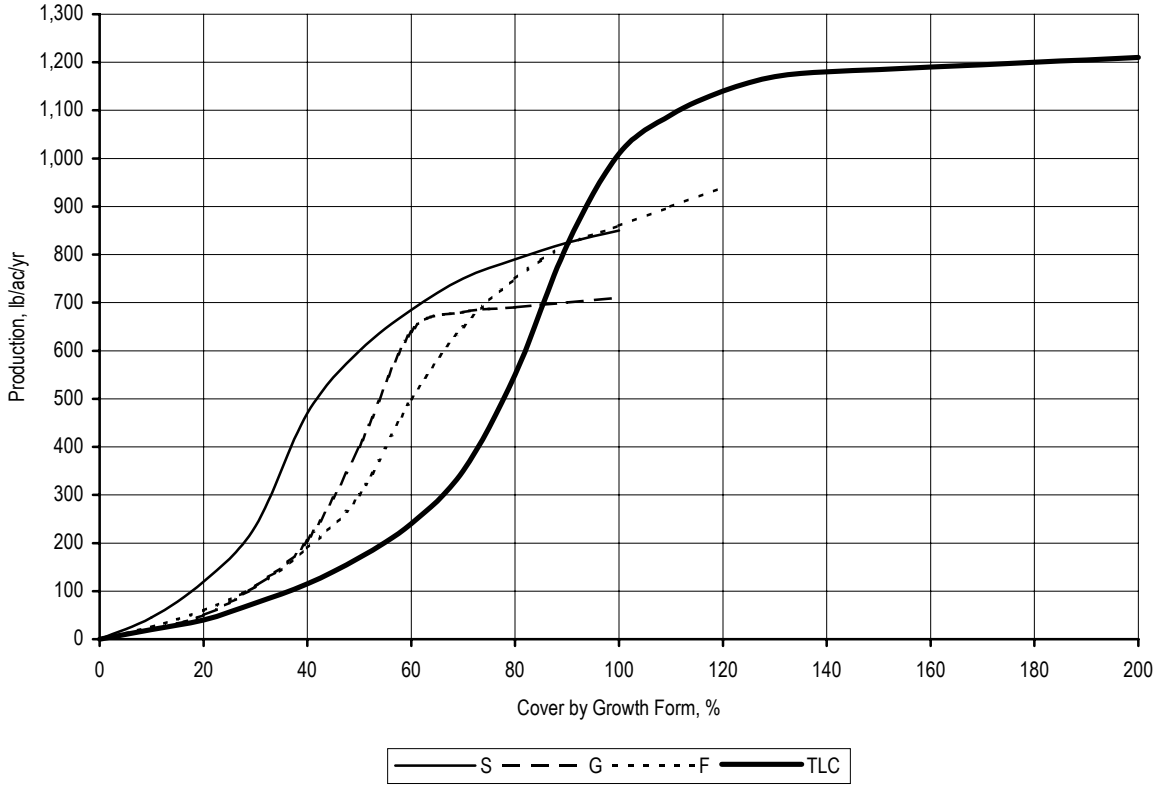


Figure 31-2. Relationship of cover by growth form and production. This is the ARARFEID (ARAR8-FEID) model. S = shrubs, G = graminoids, F = forbs, and TLC = Total live cover.

Table 31-5. Wildlife values (relative to the whole UGB) for the principal wildlife species using *Low sagebrush/Idaho fescue–Heavy clay soils*.

CT	Sage Grouse Season–Preference	Mule Deer Season–Preference	Elk Season–Preference
A, B, C, D	Spring– Very Low (Lek) Nesting– Very Low Summer– Moderate	Winter, Any–Low Spring/Fall– Mod. Low (Rest)	Winter, Any–Low Spring/Fall– Mod. Low (Rest)
E	Spring– Very Low (Lek) Nesting– Very Low Summer– Mod. Low	Winter, Any–Low Spring/Fall– Low (Rest)	Winter, Any–Low Spring/Fall– Low (Rest)

Key to Community Types

1. Parry oatgrass >30% cover ..... **A**
1. Parry oatgrass usually absent, sometimes <30% cover ..... (2)

2. Thurber fescue >10% cover. Total graminoid cover 65-110% ..... (3)
2. Thurber fescue usually absent, rarely <5% cover. Total graminoid cover 30-70% ..... (4)

3. Thurber fescue >30% cover. Junegrass (KOMA) absent or <2% cover ..... **B**
3. Thurber fescue 10-30% cover. Junegrass >5% cover, often >10% ..... **C**

4. Parry oatgrass 10-30% cover ..... **D**
4. Parry oatgrass absent or <5% cover ..... **E**

Description of Community Types

A *Parry oatgrass-low sagebrush-Idaho fescue-desert sandwort* is dominated by Parry oatgrass, with 35-75% cover. Low sagebrush is conspicuous, 10-40% cover. Idaho fescue is sometimes prominent, 2-40% cover. Junegrass (KOMA), and ballhead desert sandwort (ERCO24) are both constant. Total graminoid cover ranges from 75 to 110%. Graminoid production is 600-800 lb/ac/yr.

B *Thurber fescue-low sagebrush* is dominated by Thurber fescue, with 35-90% cover. Low sagebrush is subdominant, 10-50% cover. Parry oatgrass is usually absent, sometimes present up to 2% cover. Idaho fescue is absent or <15% cover. Total graminoid cover ranges from 70 to 120%. Graminoid production is 600-800 lb/ac/yr.

C *Low sagebrush-Idaho fescue-Thurber fescue-sulfurflower* is dominated by low sagebrush, at 20-60% cover, and Thurber fescue, 10-25% cover. Parry oatgrass is absent or <5%. Idaho fescue is always present, 1-30% cover. Sulfurflower (ERSU11) is a constant. Total graminoid cover ranges from 40 to 110%. Graminoid production is 250-750 lb/ac/yr.

D *Low sagebrush-Parry oatgrass-prairie junegrass* is dominated by low sagebrush, 5-35% cover, Parry oatgrass, 10-30% cover, or junegrass, 3-20% cover. Thurber fescue is absent. Idaho fescue is cover varies from 0 to 15%. Total graminoid cover ranges from 40 to 60%. Graminoid production is 300-500 lb/ac/yr.

E *Low sagebrush* is dominated by low sagebrush, 5-50% cover, with a variety of grasses, different in each plot. Total graminoid cover ranges from 35 to 70%. Graminoid production is 200-500 lb/ac/yr.

Communities Not Assigned to a Community Type

- One community was dominated by Idaho fescue, with lesser amounts of low sagebrush, false-dandelion (AGGL), and bluegrass (POA). This may be a separate community type that is under-represented in our sample.
- One community was dominated by almost complete cover of smooth brome (BRIN7), with lesser amounts of Kentucky bluegrass (POPR), low sagebrush, Parry oatgrass, and Idaho fescue. Smooth brome, an exotic, invaded this sites from a nearby site artificially seeded for revegetation. The natives sagebrush, oatgrass, and fescue may have declined because of shade and other competitive effects from the smooth brome. Smooth brome is not very palatable to herbivores, rendering the site useless to livestock and game. Smooth brome behaves as a weed, and should not be for revegetation.
- One community was dominated by abundant Parry oatgrass (>50% cover), and lesser amounts of low sagebrush, Idaho fescue, Thurber fescue, and other grasses. This may also be a separate community type which is under-represented in our sample.

Table 31-6. Community types within *Low sagebrush/Idaho fescue–Heavy clay soils*.

Community Type	No. samples	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Lr	Layer Height, m	Avg Layr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs	Obstruct'n %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Parry oatgrass-low sagebrush-Idaho fescue-desert sandwort	6	9,663 (9,380-9,900) 11.0 (8-14)	46 (21-66) 78 (47-116) 25 (14-36)	7 (4-15) 7 (1-18) PN-LS	GF S1 S2 M L	0.2 (0.0-1.0) 0.2 (0.1-0.7) 0.1 (0.0-0.3) 0.0 0.0	89.2 19.2 7.9 1.4 0.5	0 (0-0) 23 (13-35) 90 (77-102) 51 (25-85)	30 (19-43) 164 (127-211) 5.8 (3.9-7.5)	124-364 679-738 71-768	0 (0-0) 0 (0-0) 0 (0-0) 60 (50-75) 15 (13-19)
B. Thurber fescue-low sagebrush	6	9,745 (9,210-10,490) 22.2 (15-31)	39 (0-62) 94 (63-117) 50 (31-87)	7 (0-17) 11 (1-31) LM	GF S1 S2 M L	0.4 (0.0-1.0) 0.3 (0.1-0.5) 0.1 (0.0-0.2) 0.0 0.0	91.5 19.6 3.1 0.1 0.1	0 (0-0) 34 (16-52) 100 (73-116) 49 (8-127)	34 (26-44) 183 (114-241) 5.6 (2.7-8.0)	154-597 652-738 15-967	0 (0-0) 0 (0-0) 10 (0-40) 79 (60-95) 22 (15-34)
C. Low sagebrush-Idaho fescue-Thurber fescue-sulfurflower	4	9,653 (9,510-9,780) 11.5 (10-14)	16 (11-21) 109 (46-140) 5 (0-14)	6 (1-15) 10 (4-15) LM-MS	GF S1 S2 M L	* * Missing Missing Missing	87.3 58.7 M M M	0 (0-0) 44 (28-55) 74 (40-105) 55 (24-71)	36 (33-40) 173 (125-223) 4.9 (3.1-6.7)	263-631 290-738 64-619	0 0 0 20 5
D. Low sagebrush-Parry oatgrass-prairie junegrass	2	9,650 (9,600-9,700) 9.5 (9-10)	29 (29-29) 84 (54-113) 11 (3-18)	24 (6-41) 14 (10-19) MS	GF S1 S2 M L	0.2 (0.0-0.4) 0.2 (0.1-0.3) Missing Missing Missing	70 53 M M M	0 (0-0) 21 (5-36) 49 (45-54) 48 (43-53)	32 (28-36) 118 (112-124) 3.8 (3.1-4.4)	49-377 357-477 262-382	0 0 0 60 15
E. Low sagebrush	7	9,412 (9,220-9,750) 11.3 (9-14)	24 (8-44) 72 (49-84) 16 (6-36)	9 (2-19) 15 (4-25) EM-ES	GF S1 S2 M L	0.3 (0.0-0.9) 0.3 (0.1-0.4) 0.1 (0.0-0.2) Missing 0.0	75.0 9.5 24.3 M T	0 (0-1) 34 (11-61) 52 (38-68) 61 (40-94)	34 (12-49) 147 (109-214) 4.8 (3.0-9.1)	104-687 260-616 221-843	0 (0-0) 0 (0-0) 0 (0-0) 35 (20-45) 9 (5-11)

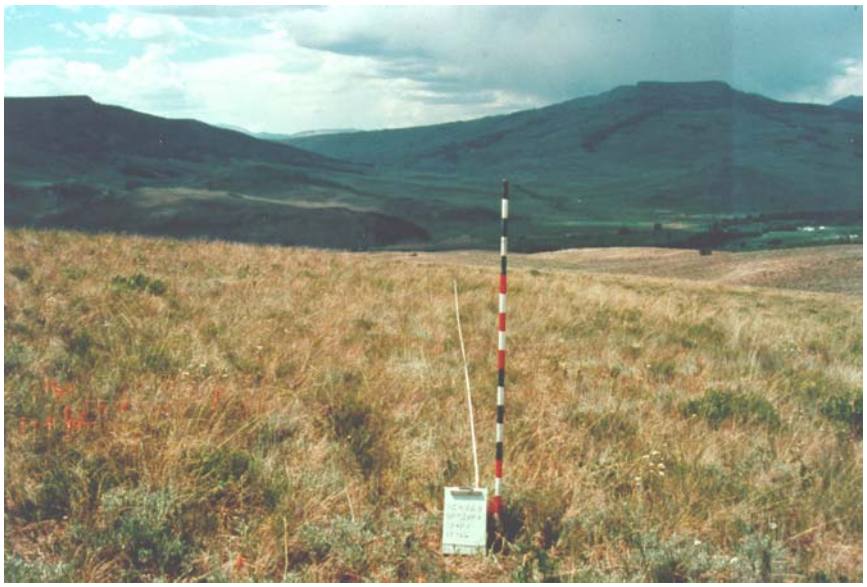
*. Unknown: measurements were not taken in this CT.

Table 31-7. Resource Values for *Low sagebrush/Idaho fescue–Heavy clay soils*. Resource values were calculated from the numbers in Table 31-6, relative to the whole UGB.

The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.

	Community Type				
Resource Value	**A**	**B**	**C**	**D**	**E**
Potential Cattle Forage Production	3	3	3	2	2-3
Grazing Suitability	2[1]	2[1]	2[1]	2[1]	2[1]
Wetland	No	No	No	No	No
Riparian Area	No	No	No	No	No
Developed Recreation	1[1]	1[1]	1[1]	1[1]	1[1]
Dispersed Recreation	1[1]	1[1]	1[1]	1[1]	1[1]
Scenic	1	1	1	1	1
Road & Trail Stability	2[1]	2[1]	2[1]	2[1]	2[1]
Construction Suitability	1[1]	1[1]	1[1]	1[1]	1[1]
Deer & Elk Hiding Cover	1	1-2	2-3	1	0-1
Deer & Elk Forage & Browse	2	2	2	1	1
Need for Watershed Protection	2-3	2-3	2-3	2-3	2-3
Soil Stability	2[1]	2[1]	2[1]	2[1]	2[1]
Risk of Soil Loss-Natural	2-3	2-3	2-3	2-3	2-3
Risk of Soil Loss-Management	4-5	4-5	4-5	4-5	4-5
Risk of Permanent Depletion-Range	3	3	3	3	3
Risk of Permanent Depletion-Wildlife	1	1	1	1	1
Resource Cost of Management	5	5	5	5	5
Cost of Rehabilitation	2-3	2-3	2-3	2-3	2-3

1. Unstable, not suitable in spring and fall, when the soil turns to sticky mud.



A low sagebrush/Parry oatgrass-Idaho fescue site in good condition (Community Type B), with some Thurber fescue. Looking at this site obliquely, it resembles a grassland, but a closer look reveals the low sagebrush shrubs, which are often shorter than the grasses. Thurber fescue 88% cover, inland bluegrass 24%, low sagebrush 23%, Lewis flax 22%, vetch 4%. Coarse Fragments Cover = 0%, Total Live Cover = 209%, Coarse Fragments in Soil = 25. Soil sampled as a Argic Pachic Cryoboroll, Fine-Loamy.
Almont Quadrangle, elevation 9,210 ft, 15% 000° (N) slope. July 28, 1994.

Table 31-8. Common Species in *Low sagebrush/Idaho fescue–Heavy clay soils*, where Characteristic cover > 10% or Constancy > 20%. "–" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula Avc = Ccv•100%/Con.

	Community Type	A		B		C		D		E		
		Ccv	(Con)	Ccv	(Con)	Ccv	(Con)	Ccv	(Con)	Ccv	(Con)	
Code	Species	N =	6		6		4		2		7	Common Name
	SHRUBS											
ARAR8	Artemisia arbuscula	23	(100)	26	(100)	40	(100)	18	(100)	24	(100)	low sagebrush
ARTRV	Artemisia tridentata ssp. vaseyana	T	(33)	–	–	T	(25)	–	–	T	(43)	mountain big sagebrush
CHVI8	Chrysothamnus viscidiflorus	T	(33)	7	(83)	2	(75)	2	(100)	1	(86)	Douglas rabbitbrush
CHVIP5	Chrysothamnus viscidiflorus ssp. pumilus	–	–	–	–	–	–	–	–	14	(43)	green rabbitbrush
MARE11	Mahonia repens	1	(17)	T	(33)	1	(25)	–	–	T	(43)	Oregon-grape
SYRO	Symphoricarpos rotundifolius	–	–	1	(50)	T	(50)	–	–	2	(43)	mountain snowberry
	GRAMINOIDS											
ACLE9	Achnatherum lettermanii	2	(17)	9	(33)	17	(50)	10	(50)	T	(29)	Letterman needlegrass
ACNE9	Achnatherum nelsonii	T	(17)	2	(33)	2	(50)	–	–	–	–	Nelson's needlegrass
ACPI2	Achnatherum pinetorum	3	(17)	4	(17)	2	(25)	–	–	4	(57)	pine needlegrass
BRCA10	Bromopsis canadensis	1	(17)	1	(83)	–	–	–	–	4	(43)	fringed brome
CAFO3	Carex foenea	–	–	12	(17)	–	–	–	–	30	(14)	silvertop sedge
CAGE2	Carex geyeri	16	(50)	28	(17)	4	(50)	–	–	T	(14)	elk sedge
CAOB4	Carex obtusata	3	(33)	4	(67)	3	(25)	–	–	5	(14)	blunt sedge
DAPA2	Danthonia parryi	56	(100)	1	(17)	3	(50)	19	(100)	2	(43)	Parry oatgrass
ELEL5	Elymus elymoides	1	(33)	1	(50)	3	(100)	3	(50)	2	(71)	bottlebrush squirreltail
FEID	Festuca idahoensis	16	(100)	6	(67)	14	(100)	11	(50)	6	(57)	Idaho fescue
FETH	Festuca thurberi	2	(67)	71	(100)	18	(100)	–	–	2	(29)	Thurber fescue
HECO26	Hesperostipa comata	–	–	–	–	–	–	1	(50)	11	(57)	needle-and-thread
KOMA	Koeleria macrantha	4	(100)	T	(50)	15	(75)	11	(100)	11	(86)	prairie junegrass
POFE	Poa fendleriana	13	(17)	–	–	5	(75)	1	(100)	11	(71)	muttongrass
POPR	Poa pratensis	–	–	4	(33)	–	–	–	–	19	(43)	Kentucky bluegrass
	FORBS											
ACLA5	Achillea lanulosa	3	(83)	11	(83)	9	(75)	4	(50)	7	(43)	western yarrow
ADLE	Adenolinum lewisii	T	(17)	6	(67)	–	–	–	–	–	–	blue flax
ALGE	Allium geyeri	2	(33)	–	–	–	–	2	(50)	T	(29)	Geyer onion
ANPA4	Antennaria parvifolia	3	(17)	1	(17)	6	(25)	–	–	2	(29)	smallleaf pussytoes
ANRO2	Antennaria rosea	6	(17)	1	(17)	2	(50)	–	–	1	(29)	rose pussytoes
CAGU	Calochortus gunnisonii	1	(50)	3	(17)	1	(50)	–	–	2	(57)	Gunnison mariposa
CALI4	Castilleja linariifolia	T	(17)	T	(17)	–	–	T	(50)	1	(57)	Wyoming paintbrush
ERCO24	Eremogone congesta	20	(100)	5	(50)	15	(50)	23	(50)	28	(71)	desert sandwort
EREA	Erigeron eatonii	2	(83)	–	–	2	(75)	2	(100)	4	(57)	Eaton fleabane
ERSP4	Erigeron speciosus	4	(33)	18	(50)	–	–	1	(50)	6	(14)	Oregon fleabane
ERSU2	Erigeron subtrinervis	1	(17)	3	(33)	1	(25)	–	–	4	(43)	threenerve fleabane
ERRA3	Eriogonum racemosum	1	(33)	–	–	T	(25)	4	(50)	3	(57)	redroot buckwheat
ERSU11	Eriogonum subalpinum	5	(33)	4	(33)	4	(100)	2	(50)	1	(14)	sulfurflower
ERTR19	Erythrocoma triflora	1	(50)	1	(17)	2	(50)	–	–	2	(14)	prairie smoke
GASE6	Galium septentrionale	8	(67)	5	(33)	3	(50)	–	–	1	(43)	northern bedstraw
GADR3	Gastrolychnis drummondii	1	(17)	–	–	–	–	1	(50)	T	(43)	alpine campion
HEPA11	Heuchera parvifolia	T	(17)	1	(83)	1	(25)	–	–	T	(14)	littleleaf alumroot
LALE2	Lathyrus leucanthus	9	(33)	4	(83)	2	(75)	1	(50)	3	(57)	aspen peavine
LUAR3	Lupinus argenteus	T	(17)	5	(67)	–	–	4	(50)	1	(43)	silvery lupine
ORLU2	Orthocarpus luteus	T	(17)	T	(17)	2	(50)	–	–	2	(14)	yellow owl-clover
PECA4	Penstemon caespitosus	–	–	–	–	1	(25)	3	(50)	5	(57)	beardtongue
PHMU3	Phlox multiflora	2	(33)	–	–	16	(25)	1	(50)	7	(14)	flowery phlox
PODO4	Polygonum douglasii	1	(17)	T	(33)	1	(50)	–	–	–	–	Douglas knotweed
POHI6	Potentilla hippiana	4	(33)	1	(50)	–	–	–	–	1	(29)	horse cinquefoil
POPU9	Potentilla pulcherrima	5	(50)	5	(50)	1	(75)	–	–	4	(71)	beauty cinquefoil
PSMO	Pseudocymopterus montanus	2	(17)	1	(17)	1	(25)	–	–	T	(29)	mountain parsely
TAOF	Taraxacum officinale	4	(33)	2	(83)	2	(75)	3	(50)	33	(29)	common dandelion
VIAM	Vicia americana	1	(17)	3	(67)	6	(50)	1	(50)	4	(86)	American vetch
WYMA	Wyethia x magna	–	–	1	(33)	10	(75)	21	(50)	2	(57)	mule's ears
	GROUND COVER											
.BARESO	bare soil	7	(100)	11	(83)	10	(100)	14	(100)	15	(86)	
.LITTER	litter and duff	86	(100)	84	(100)	82	(100)	59	(100)	75	(86)	
GRAVEL	gravel 0.2-10 cm	2		3		4		13		4		
.COBBLE	cobble 10-25 cm	3	(67)	3	(33)	–	–	2	(100)	2	(43)	
.STONES	stone > 25 cm	T	(50)	4	(17)	1	(25)	2	(100)	3	(29)	
.MOSSON	moss on soil	2	(67)	1	(17)	1	(25)	–	–	–	–	
LICHENS	lichens on soil	1		1		8		5		1		

LOW-MOUNTAIN SAGEBRUSHES/IDAHO FESCUE–HEAVY CLAY SOILS

Low sagebrush-Mountain big sagebrush/Parry oatgrass-Idaho fescue–
Smectitic Cryoboralfs–Exposed Subalpine ridges, 9,000-10,000 ft

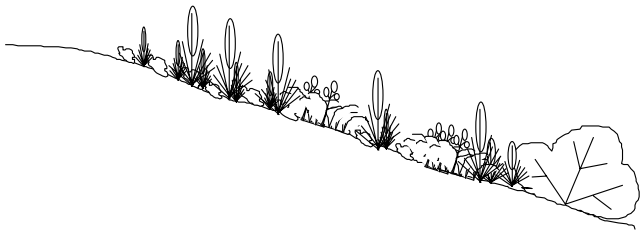


Figure 31-3. Cross-section of vegetation structure of *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*. Aspects are westerly, and slope angles average 10%.

Low-mountain sagebrushes/Idaho fescue–Heavy clay soils is an uncommon type, usually outside the deep rainshadows, on exposed Subalpine ridges in areas with heavy Smectitic clay soils. It occurs on exposed ridges in the Gunnison Basin, but is unknown elsewhere. *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils* is characterized by low sagebrush (ARAR8) and mountain sagebrush (ARTRV). See Table 31-12 for common species names and codes. Other distinguishing features include Idaho fescue, Parry oatgrass, and Mollisols.

Low-mountain sagebrushes/Idaho fescue–Heavy clay soils is related to *Low sagebrush/ Idaho fescue–Heavy clay soils*, which occurs at somewhat higher elevations on deeper, coarser soils, and is generally lacks mountain sagebrush. *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils* is also related to *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*, which has prominent Thurber fescue and occurs at somewhat higher elevations on easterly slopes with deeper, darker (Mollic), coarser soils.

The plant association *Artemisia arbuscula-A. tridentata* ssp. *vaseyana/Festuca idahoensis* is described as new here.

The soils of *Low-mountain sagebrushes/ Idaho fescue–Heavy clay soils* are morphologically similar to the soils of *Black sagebrush/Arizona fescue–Coarse heavy clay soils–Windward*, but the vegetation, soil temperature, and climate are very different. These two types have often been confused in the past, as evidenced by the local place name Black Sage Pass, where there is no black sagebrush (ARNO4) nearby, but plenty of low sagebrush (ARAR8)! The two species and associated ecological types are easily distinguished. *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils* is usually adjacent to and interspersed with mountain big sagebrush/Thurber fescue communities. Low sagebrush sites often occur as patches within a sagebrush/Thurber site.

Grazing by livestock, elk, and deer first removes palatable Parry oatgrass and Idaho fescue, after which sites are dominated by low sagebrush and forbs, especially sandwort. Once the seed sources for those grasses is eliminated, the low sagebrush-forbs community forms a *disclimax*. Horizontal obstruction varies from very low to moderate, averaging low, so there is typically, little hiding cover for deer and elk on these sites. Deer and elk use of all community types is low during the winter and moderately low spring through fall for rest.

The sites are rarely used by sage grouse for cover in the summer. Sage grouse use of all community types is very low for leks and nesting in spring and moderate in summer.

Summary of Ecological Type Characteristics

1. Explanation of symbols in Appendix A. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	5, soil descriptions from 2 (total 5)
ELEVATION	9,460 ft (9,000-9,920 ft); 2,883 m (2,743-3,023 m)
AVERAGE ASPECT	255°M (r = 0.58)
LITHOLOGY	Mudstone, sandstone, granite, gneiss
FORMATIONS[1]	Jm, Tos
LANDFORMS	Ridges
SLOPE POSITIONS	Summits and shoulders
SLOPE SHAPES	Linear to convex horizontally, Convex to concave vertically
SLOPE ANGLE	10.0%
SOIL PARENT MATERIAL	Residuum or old Alluvium
COARSE FRAGMENTS	0.9% (1-1%) cover on surface, 19.3% (19-20%) by volume in soil
SOIL DEPTH	73 cm (26-120 cm); 28.7 in (10-47 in)
MOLLIC THICKNESS	27 cm (3-51 cm); 10.6 in (1-20 in)
TEXTURE	surface: Clay loam, subsurface: Clay
SOIL CLASSIFICATION	Cryoboralfs, very deep
TOTAL LIVE COVER	182.4% (128.5-236.0%)
NUMBER OF SPECIES	22.2 (12-40)
TOTAL LIVE COVER/NO. SPECIES	10.7% (5.0-19.7%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that it results from the unique soil situation.
WATER	Soils are impermeable so most water runs off.

Community Type

A *Mountain sagebrush-low sagebrush* is dominated by mountain sagebrush, with 20-40% cover, and low sagebrush, with 10-45% cover. Parry oatgrass is usually prominent, but may be absent, with cover ranging from 0 to 75%. Idaho fescue is usually prominent but may be absent, with cover ranging from 0 to 35% cover. Thurber fescue (FETH) was prominent in one plot.

Table 31-9. Community types within *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*.

Community Type	No. samples	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m	Avg Layr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs	Obstruct'n %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Mountain sagebrush-low sagebrush	5	9,460 (9,000-9,920) 10.0 (10-10)	19 (19-20) 73 (26-120) 27 (3-51)	1 (1-1) 4 (2-5)	S1 0.7 (0.5-1.0) S2 0.3 (0.0-0.5) GF 0.2 (0.0-0.9) ML Missing	27 16 86 M	0 (0-0) 52 (31-66) 83 (37-150) 47 (19-109)	22 (12-40) 182 (129-236) 10.7 (5.0-19.7)	753-1428 512-2959 66-1167	0 (0-0) 0 (0-0) 5 (0-10) 58 (35-80) 16 (9-23)

Table 31-10. Wildlife values (relative to the whole UGB) for the principal wildlife species using *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*.

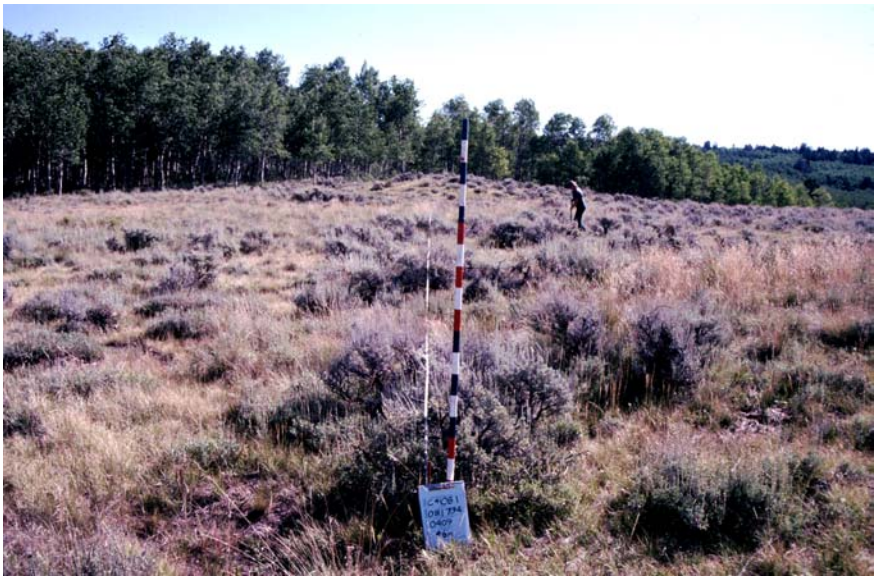
	Sage Grouse	Mule Deer	Elk
CT	Season–Preference	Season–Preference	Season–Preference
All	Spring– Very Low (Lek) Nesting– Very Low Summer– Moderate	Winter, Any–Low Spring/Fall– Mod. Low (Rest)	Winter, Any–Low Spring/Fall– Mod. Low (Rest)

Table 31-11. Resource Values for *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*. Resource values were calculated from the numbers in Table 31-9, relative to the whole UGB.

The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.

	Community Type
Resource Value	**A**
Potential Cattle Forage Production	3
Grazing Suitability	2[1]
Wetland	No
Riparian Area	No
Developed Recreation	1[1]
Dispersed Recreation	1[1]
Scenic	1
Road & Trail Stability	2[1]
Construction Suitability	1[1]
Deer & Elk Hiding Cover	1
Deer & Elk Forage & Browse	2
Need for Watershed Protection	2-3
Soil Stability	2[1]
Risk of Soil Loss-Natural	2-3
Risk of Soil Loss-Management	4-5
Risk of Permanent Depletion-Range	3
Risk of Permanent Depletion-Wildlife	1
Resource Cost of Management	5
Cost of Rehabilitation	2-3

1. Unstable, not suitable in spring and fall, when the soil turns to sticky mud.



A mixed stand of mountain and low sagebrushes, with Parry oatgrass and Thurber fescue (Community Type A). Mountain sagebrush 21%, low sagebrush 19%, Parry oatgrass 41%, Thurber fescue 26%. Soil sampled as a Mollic Cryoboralf, Fine, Smectitic.
Pitkin Quadrangle, elevation 9,920 ft, 10% 270° (W) slope. August 17, 1994.

Table 31-12. Common Species in *Low-mountain sagebrushes/Idaho fescue–Heavy clay soils*, where Characteristic cover > 10% or Constancy > 20%. "–" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula Avc = Ccv•100%/Con.

Code	Species	Ccv (Con) N = 5	Common Name
	SHRUBS		
AMAL2	Amelanchier alnifolia	1 (20)	Saskatoon serviceberry
ARAR8	Artemisia arbuscula	22 (100)	low sagebrush
ARTRV	Artemisia tridentata ssp. vaseyana	27 (80)	mountain big sagebrush
CHPA13	Chrysothamnus parryi	T (20)	Parry rabbitbrush
CHVI8	Chrysothamnus viscidiflorus	4 (60)	Douglas rabbitbrush
SYRO	Symphoricarpos rotundifolius	5 (40)	mountain snowberry
	GRAMINOIDS		
ACLE9	Achnatherum lettermanii	10 (20)	Letterman needlegrass
BRCA10	Bromopsis canadensis	T (20)	fringed brome
CAGE2	Carex geyeri	4 (20)	elk sedge
CAOB4	Carex obtusata	4 (20)	blunt sedge
DAPA2	Danthonia parryi	48 (80)	Parry oatgrass
ELEL5	Elymus elymoides	5 (60)	bottlebrush squirreltail
FEID	Festuca idahoensis	15 (80)	Idaho fescue
FETH	Festuca thurberi	11 (60)	Thurber fescue
KOMA	Koeleria macrantha	2 (40)	prairie junegrass
PASM	Pascopyrum smithii	1 (20)	western wheatgrass
POA	Poa	20 (20)	bluegrass
POFE	Poa fendleriana	5 (40)	muttongrass
POJU	Poa juncifolia	20 (20)	alkali bluegrass
POPR	Poa pratensis	40 (20)	Kentucky bluegrass
	FORBS		
ACLA5	Achillea lanulosa	4 (60)	western yarrow
AGGL	Agoseris glauca	10 (20)	false-dandelion
ALLIU	Allium	1 (20)	onion
ALGE	Allium geyeri	1 (20)	Geyer onion
AMLA6	Amerosedum lanceolatum	T (20)	yellow stonecrop
ANMA	Anaphalis margaritacea	T (20)	western pearly-everlasting
ANSE4	Androsace septentrionalis	T (20)	northern rock-jasmine
ANPA4	Antennaria parvifolia	T (20)	smallleaf pussytoes
ANRO2	Antennaria rosea	7 (20)	rose pussytoes
ASTER	Aster	11 (20)	aster
ASTRA	Astragalus	1 (20)	milkvetch
CAGU	Calochortus gunnisonii	1 (40)	Gunnison mariposa
DENU2	Delphinium nuttallianum	5 (20)	pine larkspur
DERA	Delphinium ramosum	T (20)	mountain larkspur
ERCO24	Eremogone congesta	13 (80)	desert sandwort
EREA	Erigeron eatonii	T (40)	Eaton fleabane
ERFL	Erigeron flagellaris	1 (20)	trailing fleabane
ERSP4	Erigeron speciosus	3 (40)	Oregon fleabane
ERSU2	Erigeron subtrinervis	4 (20)	threenerve fleabane
ERRA3	Eriogonum racemosum	T (20)	redroot buckwheat
ERSU11	Eriogonum subalpinum	8 (60)	sulfurflower
ERTR19	Erythrocoma triflora	T (40)	prairie smoke
GASE6	Galium septentrionale	T (20)	northern bedstraw
GARA2	Gayophytum ramosissimum	T (20)	hairstem ground smoke
LALE2	Lathyrus leucanthus	5 (20)	aspen peavine
MELA3	Mertensia lanceolata	3 (20)	lanceleaf bluebells
NOMO2	Noccaea montana	T (20)	candytuft
ORLU2	Orthocarpus luteus	3 (40)	yellow owl-clover
PADI11	Packera dimorphophylla	1 (20)	splitleaf groundsel
PATR7	Packera tridenticulata	T (20)	groundsel
PHMU3	Phlox multiflora	8 (40)	flowery phlox
PODO4	Polygonum douglasii	3 (20)	Douglas knotweed
POHI6	Potentilla hippiana	1 (20)	horse cinquefoil
POPU9	Potentilla pulcherrima	1 (20)	beauty cinquefoil
RANUN	Ranunculus	42 (20)	buttercup
SEIN2	Senecio integerrimus	1 (20)	lambs-tongue groundsel
TAOF	Taraxacum officinale	2 (20)	common dandelion
TRGY	Trifolium gymnocarpum	14 (20)	holly-leaf clover
WYMA	Wyethia x magna	5 (40)	mule's ears
	GROUND COVER		
.BARESO	bare soil	4 (60)	
.LITTER	litter and duff	92 (40)	
GRAVEL	gravel 0.2-10 cm	1	
LICHENS	lichens on soil	T	

SU6 **LOW SAGEBRUSH/THURBER-IDAHO FESCUES–COLD DARK CLAY SOILS** ARAR8/
Low sagebrush/Parry oatgrass-Thurber fescue-Idaho fescue– DAPA2-FETH-FEID
Argic Cryoborolls–Subalpine slopes, 8,900-10,600 ft

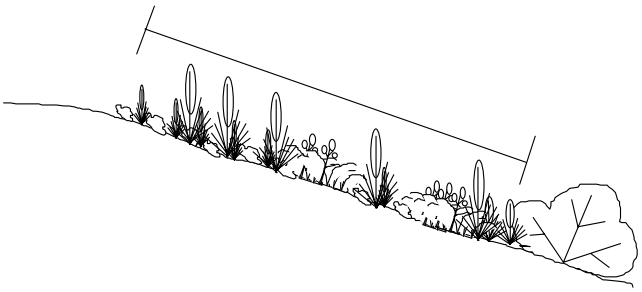


Figure 31-4. Cross-section (in the bracket) of vegetation structure of *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*. Aspects are easterly, and slope angles average 14%.

Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils is a very common type in areas outside deep rainshadows. It is unusual on various slopes in the northern part of the Gunnison Basin. It is unclear whether this type has been described from elsewhere. *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils* is characterized by low sagebrush (ARAR8), Thurber fescue (FETH), and blunt sedge (CAOB4). See Table 31-16 for common species names and codes. Other distinguishing features include Parry oatgrass (DAPA2), Idaho fescue (FEID), and Mollisols.

Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils is related to *Thurber-Arizona fescues–Deep cold dark soils*, which occurs at somewhat higher elevations on more southerly aspects and slightly shallower soils, and lacks sagebrush. *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils* is also related to *Low sagebrush/Idaho fescue–Heavy clay soils*, which occurs on more westerly aspects on less-coarse non-Mollic soils.

The plant association *Artemisia arbuscula/ Danthonia parryi-Festuca thurberi-F. idahoensis* is described as new here.

This type is usually adjacent to and interspersed with mountain big sagebrush/ Thurber fescue communities. Low sagebrush sites often occur as patches within a sagebrush/Thurber site.

Grazing by livestock, elk, and deer first removes palatable Parry oatgrass and Idaho fescue, after which site are dominated by low sagebrush and forbs, especially sandwort. Once the seed sources for those grasses is eliminated, the low sagebrush-forbs community forms a *disclimax*. Horizontal obstruction varies from low to moderate, averaging moderately low, so there is typically little hiding cover for deer and elk on these sites. Mule deer and elk use of all communities is low in the winter but moderate spring through fall for rest and forage.

Sage grouse rarely use sites for cover in the summer. Sage grouse use of all communities is very low in spring for both leks and nesting, but moderate in the summer.

Summary of Ecological Type Characteristics

1. Explanation of symbols in Appendix A. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	4, soil descriptions from 4 (total 4)
ELEVATION	9,753 ft (8,980-10,530 ft); 2,972 m (2,737-3,209 m)
AVERAGE ASPECT	89°M (r = 0.24)
LITHOLOGY	Various
FORMATIONS[1]	Various
LANDFORMS	Soil creep slopes, debris flows, and lateral moraines
SLOPE POSITIONS	Upper backslopes, toeslopes, and summits
SLOPE SHAPES	Linear to convex horizontally, Linear vertically
SLOPE ANGLE	18.5% (8-40%)
SOIL PARENT MATERIAL	Colluvial, old alluvial, or glacial
COARSE FRAGMENTS	12.6% (3-32%) cover on surface, 53.9% (30-77%) by volume in soil
SOIL DEPTH	93 cm (56-139 cm); 36.6 in (22-55 in)
MOLLIC THICKNESS	48 cm (24-106 cm); 18.7 in (9-42 in)
TEXTURE	Various
SOIL CLASSIFICATION	Argic Cryoborolls, very deep to deep
TOTAL LIVE COVER	153.2% (134.4-164.1%)
NUMBER OF SPECIES	29.5 (19-36)
TOTAL LIVE COVER/NO. SPECIES	5.6% (4.1-8.6%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that it is responding primarily to the unique soil situation.
WATER	These soils are very impermeable, hence most water runs off.

Community Type

A *Thurber fescue-low fescue-blunt sedge-aspen peavine* is dominated by Thurber fescue, 2-80% cover, and low sagebrush, 15-40% cover. Blunt sedge is a conspicuous understory plant, 3-35% cover. Total graminoid cover is 40-130%, and graminoid production is 300-800 lb/ac/yr.

Table 31-13. Community types within *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*.

Community Type	No. samples	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m Lr	Avg Layr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs	Obstruct'n %: 1.5-2.0 m 1.0-1.5 m 0.5-1.0 m 0.0-0.5 m Total<2m
A. Thurber fescue-low sagebrush-blunt sedge-aspen peavine	4	9,753 (8,980-10,530) 18.5 (8-40)	54 (30-77) 93 (56-139) 48 (24-106)	13 (3-32) 15 (13-19)	GF 0.3 (0.0-1.2) S 0.2 (0.0-0.5) M 0.0 L 0.0	84.7 25.7 0.9 3.7	0 (0-0) 26 (18-34) 87 (44-126) 40 (21-65)	30 (19-36) 153 (134-164) 5.6 (4.1-8.6)	168-346 348-737 42-550	0 (0-0) 0 (0-0) 3 (0-10) 62 (40-80) 16 (10-23)

Table 31-14. Wildlife values (relative to the whole UGB) for the principal wildlife species using *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*.

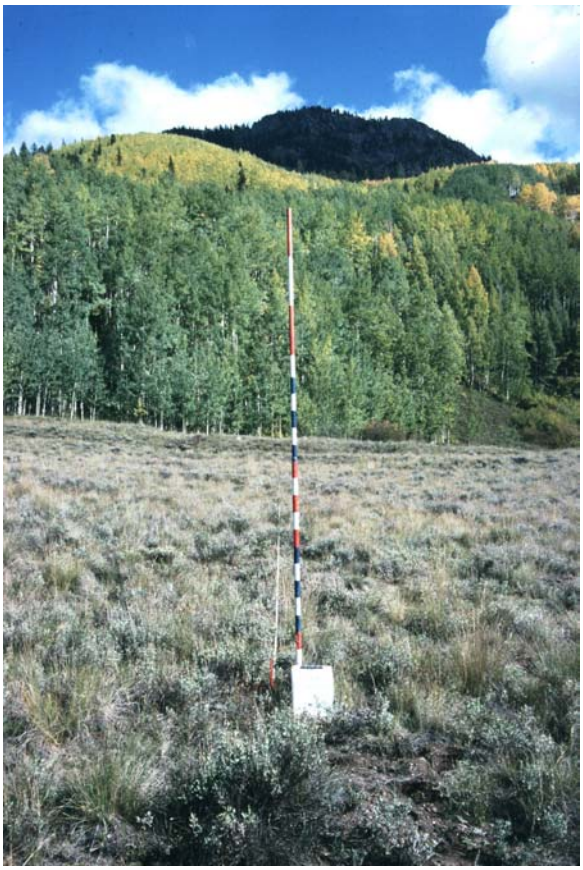
	Sage Grouse	Mule Deer	Elk
CT	Season–Preference	Season–Preference	Season–Preference
All	Spring– Very Low (Lek) Nesting– Very Low Summer– Moderate	Winter, Any– Low Spring/Fall– Moderate (Rest)	Winter, Any– Low Spring/Fall– Moderate (Rest, Forage)

Table 31-15. Resource Values for *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*. Resource values were calculated from the numbers in Table 31-13, relative to the whole UGB.

The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.

	Community Type		Community Type
Resource Value	**A**	**Resource Value**	**A**
Potential Cattle Forage Production	3	Sage Grouse Cover	3-4
Grazing Suitability	2[1]	Sage Grouse Nesting/Brood Potential	ns
Wetland	No	Need for Watershed Protection	2-3
Riparian Area	No	Soil Stability	2[1]
Developed Recreation	1[1]	Risk of Soil Loss-Natural	2-3
Dispersed Recreation	1[1]	Risk of Soil Loss-Management	4-5
Scenic	1	Risk of Permanent Depletion-Range	3
Road & Trail Stability	2[1]	Risk of Permanent Depletion-Wildlife	1
Construction Suitability	1[1]	Resource Cost of Management	5
Deer & Elk Hiding Cover	2-3	Cost of Rehabilitation	2-3
Deer & Elk Forage & Browse	2		

1. Unstable, not suitable in spring and fall, when the soil turns to sticky mud.



An example of the low sagebrush/Thurber-Idaho fescues type (Community Type A). Low sagebrush 34% cover, Thurber fescue 46%, blunt sedge 18%, mountain muhly 13%, Parry oatgrass 4%. Soil sampled as a Pachic Argiboroll, Loamy-Skeletal, Mixed. Gothic Quadrangle, elevation 8,980 ft, 8% 078° (ENE) slope. September 19, 1994.

Table 31-16. Common Species in *Low sagebrush/Thurber-Idaho fescues–Cold dark clay soils*, where Characteristic cover > 10% or Constancy > 20%. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula Avc = Ccv•100%/Con.

Code	Community Type Species	A Ccv (Con) N = 4	Common Name
	SHRUBS		
AMAL2	Amelanchier alnifolia	2 (25)	Saskatoon serviceberry
ARAR8	Artemisia arbuscula	24 (100)	low sagebrush
CHNA2	Chrysothamnus nauseosus	1 (50)	rubber rabbitbrush
CHPA13	Chrysothamnus parryi	T (25)	Parry rabbitbrush
CHVI8	Chrysothamnus viscidiflorus	1 (75)	Douglas rabbitbrush
MARE11	Mahonia repens	T (25)	Oregon-grape
PAMY	Paxistima myrsinites	T (25)	mountain-lover
ROWO	Rosa woodsii	2 (25)	Woods rose
	GRAMINOIDS		
ACLE9	Achnatherum lettermanii	5 (50)	Letterman needlegrass
ACPI2	Achnatherum pinetorum	4 (50)	pine needlegrass
BRCA10	Bromopsis canadensis	5 (25)	fringed brome
BRPO5	Bromopsis porteri	1 (25)	nodding brome
CAFO3	Carex foenea	1 (25)	silvertop sedge
CAOB4	Carex obtusata	18 (100)	blunt sedge
CASTE3	Carex stenophylla ssp. eleocharis	3 (25)	needleleaf sedge
DAPA2	Danthonia parryi	4 (25)	Parry oatgrass
ELEL5	Elymus elymoides	4 (75)	bottlebrush squirreltail
ELTR7	Elymus trachycaulus	2 (25)	slender wheatgrass
FEAR2	Festuca arizonica	3 (75)	Arizona fescue
FESA	Festuca saximontana	1 (25)	Rocky Mountain fescue
FETH	Festuca thurberi	41 (100)	Thurber fescue
HECO26	Hesperostipa comata	1 (25)	needle-and-thread
KOMA	Koeleria macrantha	3 (50)	prairie junegrass
MUMO	Muhlenbergia montana	13 (25)	mountain muhly
POFE	Poa fendleriana	11 (75)	muttongrass
POPR	Poa pratensis	4 (25)	Kentucky bluegrass
	FORBS		
ACLA5	Achillea lanulosa	3 (50)	western yarrow
ADLE	Adenolinum lewisii	2 (25)	blue flax
AGGL	Agoseris glauca	1 (50)	false-dandelion
ALGE	Allium geyeri	1 (25)	Geyer onion
ANRO2	Antennaria rosea	13 (25)	rose pussytoes
CAGU	Calochortus gunnisonii	T (25)	Gunnison mariposa
COUM	Comandra umbellata	1 (25)	bastard toadflax
DENU2	Delphinium nuttallianum	T (25)	pine larkspur
ERCO24	Eremogone congesta	26 (50)	desert sandwort
EREA	Erigeron eatonii	8 (25)	Eaton fleabane
ERSP4	Erigeron speciosus	T (25)	Oregon fleabane
ERSU2	Erigeron subtrinervis	1 (50)	threenerve fleabane
ERSU11	Eriogonum subalpinum	1 (50)	sulfurflower
ERUM	Eriogonum umbellatum	6 (50)	sulfur buckwheat
ERTR19	Erythrocoma triflora	1 (25)	prairie smoke
FRVI	Fragaria virginiana	1 (25)	Virginia strawberry
GADR3	Gastrolychnis drummondii	1 (25)	alpine campion
IPAG	Ipomopsis aggregata	T (25)	trumpet gilia
LALE2	Lathyrus leucanthus	4 (100)	aspen peavine
LIPO	Ligusticum porteri	T (25)	osha
LUAR3	Lupinus argenteus	4 (50)	silvery lupine
ORLU2	Orthocarpus luteus	1 (25)	yellow owl-clover
PESA2	Penstemon saxosorum	T (25)	upland beard-tongue
PEST2	Penstemon strictus	1 (25)	Mancos penstemon
POHI6	Potentilla hippiana	8 (25)	horse cinquefoil
POPU9	Potentilla pulcherrima	1 (25)	beauty cinquefoil
PSIN4	Psilochenia intermedia	2 (25)	gray hawksbeard
SOSI3	Solidago simplex	3 (25)	Mt. Albert goldenrod
TAOF	Taraxacum officinale	1 (50)	common dandelion
VIAM	Vicia americana	3 (50)	American vetch
WYMA	Wyethia x magna	12 (25)	mule's ears
	GROUND COVER		
.BARESO	bare soil	15 (100)	
.LITTER	litter and duff	72 (100)	
GRAVEL	gravel 0.2-10 cm	4	
.COBBLE	cobble 10-25 cm	6 (50)	
.STONES	stone > 25 cm	3 (50)	
.MOSSON	moss on soil	4 (25)	
LICHENS	lichens on soil	15	